

Department of Anatomy & Cell Biology Seminar Series

Stephanie Lehoux, PhD

Professor, Department of Medicine
Senior Investigator, Lady Davis Institute
McGill University

Understanding the ins and outs of atherosclerotic plaque formation

Cardiovascular diseases, the most prevalent cause of death in Canada, usually result from atherosclerosis, a fatty deposit of cholesterol, blood cells and fibres in the wall of arteries. Interestingly, atherosclerotic lesion localization is influenced by local hemodynamics. Vessel segments exposed to high flow are typically devoid of atherosclerosis. On the contrary, vessel segments exposed to low or oscillatory blood flow are prone to atherosclerotic plaque formation. Our lab has focussed on this singular relationship between local blood flow and atherosclerosis, exploring the mechanisms that explain atheroprotection and even plaque regression. As regards this latter aspect, we have developed an original surgical mouse model to increase blood flow in the brachiocephalic artery (BCA), a plaque-prone atherosclerotic segment. In LDLR^{-/-} mice fed a high fat diet for 12 weeks, creation of an arteriovenous fistula increases blood flow in the BCA and leads to plaque regression, whereas BCA plaques in animals with sham surgery keep getting bigger. Using this model, we have explored the hallmarks of progressing plaques, and how they may be reversed in the regressing plaques. These include the continuous influx of macrophages in atherosclerotic plaques, macrophage entrapment with the lesions, and loss of macrophage phagocytic capacity. We are also investigating how cells originating from the vessel wall may contribute to plaque progression or regression.



Wednesday, Feb. 1st, 2023
11:30am - 12:30pm



Room 1/12 - Strathcona
Anatomy and Dentistry
Building

Hosted by: Dieter Reinhardt, PhD



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